# EXAMINATION OF IMPROVED TRANSIT SERVICE

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•THE municipality of Iowa City instituted a conventional transit system in September 1971 that replaced a private system that had ceased operation. New 45-passenger buses, an increased level of service, and a reduced fare (25 to 15 cents) were provided. The level of service was increased from seven to ten routes, which provides a 20 percent increase in coverage and a 39 percent increase in mileage. A considerable increase in patronage is being experienced as a result of the reduced fare and the increase in level of service. A 165 percent increase in patronage has occurred for the period September 1971 to February 1972 as compared to the same period in 1970 to 1971 (678,976 fare passengers in the 6 months of 1971 to 1972 as compared to 256,294 in 1970 to 1971).

Iowa City is approaching a population of 50,000, and the urbanized area contains nearly 60,000. This includes 20,000 University of Iowa students. As in many communities of this size, there exists a great dependence on the automobile, and transit handled a decreasing proportion of the trips in the urban area during the 1960s—from 4 percent of all trips in 1964 to 1 percent in 1970. However, the adjacency of the University of Iowa campus to the central business district (CBD) provides a single, strong central focus that can be served effectively by transit.

The authors of this paper conducted the mass transit technical study (1) for the Johnson County Regional Planning Commission. While the study was in progress, it became evident that the municipality of Iowa City was best able and most willing to operate the public system, which made it the effective client for the study. The mass transit technical study recommended routes, estimated costs, and estimated patronage for the new municipal system. A three-stage implementation, to be carried out during a 3-year period, was recommended. The first stage called for establishing the new operation with essentially the same number of routes that had existed before. The second stage called for increasing the number of routes by three, and stage three was designed to bring a suburban carrier into the system. The recommendations of the mass transit technical study were followed closely, and the system was established before the final report was published. The city council chose to implement the system through stage two, immediately.

The purpose of this paper is to describe the nature of the prior service, the recommendations of the mass transit technical study, the patronage response to the improved service, the impact of the improved service on traffic and parking, capacity problems of handling patronage, the technical and policy questions of additional improvements to the level of service, and continued studies of transit that are under way. The discussion of these items in the Iowa City context provides a perspective on instituting a successful transit service. However, success, in terms of nearly tripling patronage, still requires subsidy and has brought capacity problems and even higher expectations for transit.

## PREVIOUS SERVICE

Transit service in Iowa City had reached a crisis stage during 1970 as the private operator, in the face of the classical problem of declining patronage and rising costs, notified the city that he planned to cease operating transit service. In addition to oper-

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ating a seven-route city transit system, the Iowa City Coach Company operated a charter bus service and a school bus service for Iowa City Community School System. The city transit service had become a serious drain on an otherwise profitable operation.

### Service Level

The Iowa City Coach Company operated a continuous-service line-haul system, using 31- and 35-passenger coaches. The average age of the buses was nearly 14 years. Five of the seven routes contained long loops that were used to expand the area coverage of the limited system. Service hours were from 6:30 a.m. to 6:30 p.m., 6 days per week. Headways were 30 minutes on four routes and 20 minutes on the remaining three. There had been little attempt to expand service to new growth areas of the city, even though the city's population had increased by more than 40 percent in the 10-year period from 1960 to 1970. The level of service during the 1960s was fairly constant.

### Early Subsidy

The increase to a 25-cent fare in the spring of 1966 drove ridership to a record low and actually produced a decrease in revenue. In an effort to maintain some form of transit service, the university agreed to subsidize the transit system at $3,000 per month, with the stipulation that university students be allowed to ride for a 10-cent fare. The result was an immediate doubling of ridership.

Because of pressure from local citizens, the city council agreed to share in the subsidy, increasing it to $5,000 per month, and the general fare was reduced to 10 cents. The subsidy created a highly profitable arrangement for the private operation though it was difficult to determine the extent of the profit because the company also operated a school bus service and charter service. The year-end audit seemed to indicate an oversubsidization, with excess profits being earned by the operator. This resulted in a demand for extended service, which the private operator refused to do, and the subsidy was withdrawn.

A labor contract, negotiated in 1967, raised driver wage levels nearly 40 percent. This contract, coupled with the cessation of the subsidy agreement, created a rising cost-constant revenue situation. In an attempt to cover costs, the private operator began raising fares in 5-cent increments to the 1970 level of 25 cents. The fare increases raised revenues but drove away choice riders. The result was further financial losses as cost continued to rise faster than revenue.

### Final Subsidy

In the spring of 1970, the owner, who had been operating without a franchise, threatened to terminate service as of June 6, 1970. The regional planning commission was in the process of contracting for a mass transit technical study at this time. A publicly financed system was being considered, but it was at least 1 year away from implementation. As a stopgap measure, the city entered into an agreement with the private operator to continue service. The city agreed to pay the Iowa City Coach Company $90 per day per route with the city retaining all revenues. As a result, the city has paid up to $9,000 per month in subsidy. This agreement continued for 14 months at a total cost of $81,805 ($220,000 cost as compared to $138,000 in revenues) until September 1, 1971, when the improved public service was implemented.

## MASS TRANSIT TECHNICAL STUDY

In mid-1970, the Johnson County Regional Planning Commission received a mass transit technical study grant from the Urban Mass Transit Administration (UMTA). The Center for Urban Transportation Studies of the Institute of Urban and Regional Research at the University of Iowa was awarded a contract to develop a short-range transit plan, consisting of an analysis to recommend alternative route patterns and to estimate their patronage and cost.

During the course of the technical study, the Johnson County Regional Planning Commission explored alternative agency arrangements for operating the system. It became apparent that the municipality of Iowa City was willing and best able to provide transit service. The city administration then restricted consideration of alternatives to a level of service that would maintain subsidy requirements to less than $100,000 annually and would require capital investment on the order of 10 to 15 buses.

## Findings

The technical study made findings in five general areas: routing, headways, hours of operation, fares, and service variables.

The existing routing patterns had three severe shortcomings. There was no service available to new growth areas of the city, residential or commercial. Loop-type route patterns were used to gain wider coverage, doubling ride times and lowering the level of service to residential areas. No use was made of crosstown routing patterns to better service the west campus-hospital area.

The 6:30 a.m. to 6:30 p.m. hours of operation were reasonable, considering that evening service would not generate enough revenue to cover variable costs. However, analysis indicates evening service could be justified on several university-related routes.

An on-board survey showed that the 25-cent fare was attracting primarily captive riders and few choice riders. Past experience had indicated that a fare greater than 15 cents was unattractive to the choice rider. In general, the results of the on-board survey are similar to results of studies conducted in other cities, indicating that transit patrons were largely captive riders.

The quality of service was low. The buses were old and uncomfortable, and they lacked air-conditioning and flow-through heat. The streets on which transit operated were narrow, yet on-street parking was allowed. Little consideration was given to facilitating transit traffic. Bus drivers received little training or incentive to build a better public image.

## Recommendations

The recommended system was designed to provide an adequate level of transit service at a cost the city was able and willing to pay.

Crosstown routes were utilized to provide service to the west campus from all areas of the city. The routes were located so as to eliminate duplication and to be within three blocks of most residential locations. Ten routes, as compared to the previous seven, were recommended. Extension of shorter routes increased some headways from 20 minutes to 30 minutes, but line routing decreased average ride times. Twenty-minute headways with nighttime service were proposed from the two routes serving primarily university students.

Assessment of several alternative fares was made to provide information to the city for a policy decision regarding fare structure. However, a fare of 15 cents was recommended. It was predicted that the lower fare would bring bus service to more people in the community, which is an objective of the publicly owned and subsidized system. In addition, a student fee was suggested. The student fee would consist of perhaps a 5-dollar fee per semester for all students. This fee would give students transit service throughout the entire community during that period, requiring only presentation of a university ID card, and would provide a basic funding floor for the transit operation. However, the city instituted a flat 15-cent fare.

The Iowa City administration, in concurrence with the Johnson County Regional Planning Commission staff, chose to purchase all 45-passenger buses rather than a mixture of 45- and 33-passenger vehicles. This choice was based on the advantages of maintaining only one type of vehicle and having extra capacity when needed. Also, when total labor, maintenance, operating, and depreciation costs are considered, the difference in purchase price between a 45-passenger bus and a 33-passenger bus is not significant. Furthermore, the larger bus was felt to be more durable, and it contained an air-pollution control package that was not available on the 33-passenger bus.

Comparison of swept-area diagrams for turning movements for the 33- and 45-passenger buses shows little difference. These advantages were felt to offset the advantages of a smaller, more maneuverable bus.

It was also recommended that the city provide for the elimination of on-street parking for transit routes on narrow streets, lengthen curb radii at certain intersections to improve turning movements, and improve traffic flow on heavily traveled streets used by transit vehicles.

### Patronage Estimates

Initially, a trip split model was formulated by using data from the Iowa City Origin and Destination Study completed in 1964 by the Iowa State Highway Commission. The dependent variable, percentage of total person trips using transit, was related to variables of three types: production-end variables, attraction-end variables, and zone-to-zone service variables. The resulting estimating equation was unsuitable because it was based on a small relative number of transit trips, 197 transit trips out of 11,512 person trips. It was a better descriptive than predictive model, and the model was not sensitive to changes in level of transit service.

Consequently, a purpose-specific model was developed utilizing the on-bus survey data gathered during the mass transit technical study and projected interzonal transfers. Because 91 percent of all transit trips either started or ended in the CBD, and because this zone was to continue to be the central node in the new system, it was decided to concentrate on predicting purpose-specific attractions to this zone. The new total trips produced were based on increasing the 1964 interzonal trip matrix by 3 percent per year, which is the method used by Iowa City in estimating traffic. The control total of transit trips was obtained from the sum of percentages of transit use in zones currently served by transit.

Use of this method enabled us to better utilize Iowa State Highway Commission projections for the transportation study, and it also gave us a greater sensitivity to level of transit service in predicting future ridership. Three trip purposes were used: work trips, school trips, and other trips.

Manual assignment was made to account for service to proposed university peripheral parking lots, replacements of existing private transit service, and an improved, extended hour service to university housing areas. The resulting trips were then allocated to bus routes and checked against current data for accuracy.

Implicit in the modal-split estimation is a 25-cent fare that was in effect at the time of the on-bus survey. Past patronage data were analyzed to detect relations between fare and patronage. Patronage data, when prior subsidies and reduced fares were in effect, provided good information for determining the impact of fare on patronage. A very high degree of correlation was found, particularly when university enrollment was introduced as a controlling factor. These relations are given in Table 1. The results of this analysis were then applied directly to the results of the modal-split equation to indicate changes in patronage. In retrospect, separate equations for summer and school year should have been used. This would have removed the need for using enrollment as a variable.

### Implementation

The recommended system was implemented by the city on September 1, 1971, with several exceptions: no nighttime service was provided; all routes had 30-minute headways; no university subsidey was provided; no budget provisions were made for bus shelters and other amenities; and the suburb of Coralville continued its separate service.

## ANALYSIS OF PATRONAGE RESPONSE

There has been a substantial increase in patronage as a result of the new transit service in Iowa City. New routes, new 45-passenger buses, and reduced fare (25 to 15 cents) are the principal reasons for the increased patronage.

The Iowa City transit system is maintaining daily and monthly statistics generated from fare-box revenue and is supplementing the data with counts of the number of

passengers by time of day on each route. So far, the data are comparable with data collected for the prior service; they show a wide variation in monthly ridership that responds to university enrollment and climate. Figure 1 shows the percentage of annual patronage by month for the prior service. These percentages were calculated from 12-month periods when fare and service variables were constant. The percentage of annual patronage ranged from 5.68 percent in August to 11.22 percent in January. Analysis of the new patronage data indicates that monthly variations are less pronounced.

The variation in patronage by month, with the sharp peak in winter months, results in capacity deficiencies during peak hours of winter months. There is also a considerable daily variation in ridership, again primarily due to university class schedules with Monday and Wednesday being the peak days. Similarly, there is a considerable variation in transit patronage by time of day with the majority of the transit trips occurring during the peak hours of the morning and evening.

On January 24, 1972, additional peak-hour service was instituted. Headways were reduced from 30 minutes to 20 minutes by adding five buses to each of the five cross-town route pairs. This increased the level of service by one-third during the peak hours of 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. each weekday.

The monthly patronage for the new system (Table 2) has been increasing in general accordance with the percentages shown in Figure 1. The projections made from the actual September ridership (Table 2) seem to be consistent with the observed ridership. The predictions made from the original revenue estimate (1) are slightly lower than, but also consistent with, the recent data. The original patronage estimates made by the authors (1, pp. 47-51) were obtained from a purpose-specific modal-split model applied to the traffic zones served by each alternative transit plan.

The result of the modal-choice analysis was an estimate of patronage for an average weekday in April, which was approximately 4,300 revenue passengers for the stage-two level of implementation. This could be compared to the weekday average of 4,445 in October and 4,975 in November of 1971.

The important figures for operating purposes are both average weekday and peak-hour ridership. Examination of the patronage data reveals the following:

1. The average weekday patronage has been steadily increasing.
2. The variance in patronage between days of the week has been decreasing.
3. The nature of the peak hour does vary with different days. Mondays, Wednesdays, and Fridays have a "two-pronged" morning and afternoon peak hour that is due to university class schedules. The Friday afternoon peak is much flatter, lasting from 3:30 to 5:30 p.m. Tuesdays and Thursdays have "single" peaks at 7:45 a.m. and 5:00 p.m.
4. Saturday patronage has increased threefold because the lower fare is attractive to youths.
5. Normally, December patronage declines because students are away for 2 weeks. This year patronage did not decline, which indicates that more Christmas shoppers and youths used transit than in prior years.
6. The January patronage was depressed because of capacity deficiencies and "bugs" in instituting the improved service during the last week of January.
7. The February patronage has significantly increased over what was expected because of the improved level of service during peak hours. (February 1972 includes an additional day.)
8. Examination of route-specific patronage is included in a more detailed description of the Iowa City experience (2).

## CAPACITY CONTROVERSY

During the fall of 1971, it became apparent that the newly instituted transit service might not be able to handle adequately the peak-hour demand during the winter months of December to March. The question of whether to provide additional capacity during peak hours became a controversial issue. The city administration took the position that adequate service may mean some crowding, delays, and, in some instances, passing people by.

In early December 1971, the question of whether to lease buses to provide additional capacity was considered by the city council. Individuals, including the authors of this paper, and groups such as Citizens for Better Iowa City, Citizens' Advisory Committee to the Area Transportation Study, and Citizens for Environmental Action, pressed for augmenting service. The city manager viewed these efforts to be financially irresponsible and reluctantly provided cost estimates for leasing additional buses based on a 12-month lease and operation. He also produced a revised cost estimate for the existing system, which indicated a larger than budgeted deficit. These estimates painted a projected deficit that the council was unable to assume.

The posture of the city administration changed in January 1972 when the city manager resigned. A new estimate for leasing buses, but for a shorter term, was presented to the city council by the acting city manager. In early January 1972, the city council decided to lease buses to provide 20-minute headways on all routes during peak hours. This action was taken because capacity deficiencies became apparent to all. The additional peak-hour service went into effect on January 24, 1972.

## IMPACTS OF NEW SERVICE

The new system was designed to furnish an attractive level of service to the CBD-central campus-hospital complex area from the principal Iowa City residential areas. Origin-destination study data indicate that more than 25 percent of the trips in the Iowa City urbanized area are of this nature. The prior level of service attracted, at most, 3 percent of these trips, whereas the new service continually serves 10 to 12 percent of the daily total and up to 15 percent of the centrally oriented trips occurring during transit service hours.

One of the concomitant effects of the new transit service is a significant reduction in parking revenues. The fall of 1971 saw an increase in the use of the transit system and in the use of bicycles. Table 3 gives the decline in parking revenues for 1971-1972 as compared to the 2 prior years. This decline appears to have been temporary, which indicates it may have been influenced by bicycle users as well as by transit riders. It appears to be too early to draw conclusions. However, this is an important issue because a proposal for a downtown parking ramp is dependent on increased parking revenues that would be achieved by increasing rates.

During November, the new system carried an average of 3.1 revenue passengers per route-mile, generating an average of approximately 46 cents per route-mile in revenue. During the average weekday, the Hawkeye Apartments route generated nearly $1.50 per route-mile, whereas the two lowest patronized routes were about 20 cents per route-mile. On Saturdays, nearly all routes operate at less than half the weekday revenue-producing levels.

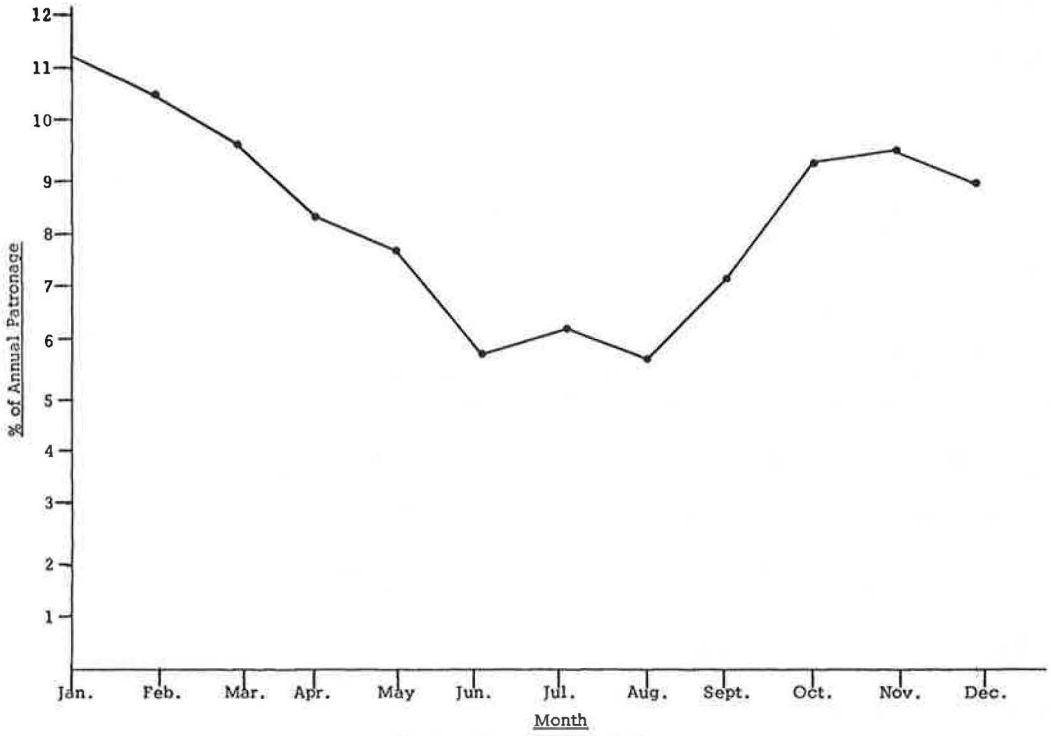
The 15-cent fare has resulted in some fare collection problems, causing an increase in run times and a decrease in driver efficiency. The transit supervisor estimates that more than one-third of all passengers require the driver to make change. A solution would be to sell monthly passes or tokens at a slightly reduced rate. The use of the tokens or a pass would speed up both fare collection and passenger pickup times, allowing the driver to more closely adhere to his schedule, particularly during peak periods.

Generally speaking, transit patronage has increased from about 2,000 patrons per weekday on the old system to about 6,000 patrons per weekday on the new system. What has been the reduction in automobile trips? Parking revenues tell part of the story, and traffic counts, which are not available at this time, may indicate more. If one assumes that one-half of the new patrons formerly drove, a significant reduction in automobile travel has been made.

## CONTINUED INVESTIGATIONS

In addition to the continued monitoring of patronage response as previously described, a variety of other studies are under way to continue analysis and improvement of transit service in Iowa City. First, a before-and-after study of transit attitudes and preferences has been conducted and analyzed. Second, a campus travel behavior study has been conducted and is being analyzed. Third, the university has implemented a campus

**Figure 1. Percentage of annual patronage by month.**




Source: Iowa City Coach Company

**Table 1. Fare-patronage relation.**

| Fare (cents) | Monthly Patronage | Percentage of 25-Cent Standard |
|---|---|---|
| 10 | 104,319 | 193 |
| 15 | 82,023 | 157 |
| 20 | 66,204 | 122 |
| 25 | 53,933 | 100 |
| 30 | 43,907 | 81 |

Note: $y_1 = 1{,}252.687 - 54{,}989.547x_1 + 23{,}375.125x_2$; R = 0.9009; $R^2 = 0.81$; SE = 8,415; $y_1$ = monthly patronage; $x_1$ = natural log of fare in cents; and $x_2$ = natural log of University of Iowa enrollment.

**Table 2. Revenue passengers.**

| Month | Patronage | | |
|---|---|---|---|
| | Actual | Estimate[a] | Estimate[b] |
| September | 85,540 | — | 80,000 |
| October | 108,540 | 111,000 | 104,000 |
| November | 109,035 | 112,000 | 105,000 |
| December | 109,428 | 105,000 | 98,000 |
| January | 126,851 | 131,000 | 123,000 |
| February | 136,582 | 123,000 | 115,500 |
| Total | — | 1,178,000 | 1,100,000 |

[a]Based on September 1971 actual patronage.
[b]Based on mass transit technical study projection (1).

**Table 3. Parking revenues.**

| Year | Type of Parking Revenue[a] (dollars) | | | |
|---|---|---|---|---|
| | On-Street | Off-Street | Permit | Total |
| 1969-1970 | 73,370 | 36,379 | 8,115 | 117,864 |
| 1970-1971 | 76,567 | 39,238 | 8,750 | 124,555 |
| 1971-1972 | 68,752 | 33,719 | 8,099 | 110,570 |

Note: During 1970-1971 and 1971-1972 (September through February), total parking revenues were $146,800 and $134,067 respectively.

[a]Based on September through January period.

shuttle service. Fourth, the Johnson County Regional Planning Commission is applying to UMTA for a long-range transit study to augment the area transportation study being undertaken in the Iowa City urban area with the assistance of the Iowa State Highway Commission.

## Before-and-After Study

Just prior to implementing the new transit system, the Institute of Urban and Regional Research conducted the before portion of an attitude and preference study to determine attitudes toward and preferences for transit service. In November, the after portion of the survey was conducted. As part of the survey, travel behavior and socioeconomic data were collected. The surveys were conducted by using a "mail out-mail back" semantic differential type of questionnaire. Scaled responses (agree-disagree) to various statements were used to determine preferences and attitudes regarding transit. In each survey, 500 questionnaires were sent to students and 500 to area residents. In both cases, the return rate was approximately 35 percent. Many persons responding to the first survey agreed to be resurveyed and participated in the after survey.

The analysis determined the effect of variation in some of the significant attributes related to feelings of satisfaction with the new system. Introduction of the new service has increased the total positiveness of people's attitudes toward the transit service. Even those attributes that were unchanged were viewed more positively by respondents. Apparently enough key variables were changed in the transit operation to change the overall image (3).

## Campus Travel Behavior Study

A random sample of 3,000 students at the University of Iowa received questionnaires soliciting information about their travel patterns for 1 day. They were asked to respond for the third Monday in May 1971, and approximately one-third of the sample returned completed questionnaires. The returns were checked against the proportion of students by age, sex, and academic major, and the sample agreed closely with the total-universe figures for these variables. Approximately 1,000 usable questionnaires, 5 percent of the student body, were returned. Analysis of the longer intracampus trips and the trips to and from campus are providing clues as to student needs, particularly because students are prohibited from parking in many central campus locations.

The campus travel behavior data have been analyzed and are providing the university's administration with useful information with respect to scheduling classes, locating new buildings, and providing campus transit service. The data will also provide the foundation on which to calibrate a campus travel simulation model (4).

## Campus Shuttle Study

The University of Iowa has also entered the field of transportation. Feelings are strong about the proliferation of open parking lots on campus and the use of open space for additional buildings. On the other hand, there is considerable pressure to make more parking space available (within walking distance of the campus) to students and staff. The administration and student senate have instituted a semester-long experimental shuttle bus service around the campus, which serves longer walk trips on campus and a peripheral parking lot.

A circular shuttle route with three buses operating in each direction is being operated during the spring semester of 1972. The student senate and the university administration are providing funding for the system, which uses leased buses and employs student drivers through the work-study program. There is no fare; students and staff only show their university identification. Response to this service is determining the degree to which walking trips are intercepted, the amount of diversion from the municipal bus service, and the utilization of peripheral parking by commuting students and staff.

During the first 6 weeks of operation, patronage has averaged 7,000 passengers per day with a peak day of 8,200. Typically, Monday and Wednesday are peak days during the week although impacts of cold weather are more important. Many long walking trips are diverted to the campus shuttle on cold days. Currently, the impact of warm weather and increased use of bicycles is of concern.

Use of the shuttle has been predominantly by the students and, among the students, chiefly underclassmen. This parallels a tendency for shuttle use to be heaviest among dormitory residents. The average rider uses the shuttle bus about 10 times per week, and about 5,500 different persons use the bus during the course of an average week (with 35,000 ridership). It appears that the bus system is used more in terms of trips with one end at the residence rather than trips around campus. This is because most riders have changed their mode of travel to campus. The most common change is from walking to using the campus bus, but use of the automobile has also been changed such that about 500 automobiles have been eliminated from the central campus. The typical bus passenger is a male, freshman, dormitory resident who uses the bus twice per day to get to class and to return to the dormitory. He would walk if the bus were not available. The nature of the bus use as shown in these data seems to support fairly well the initial objectives of the bus system. It is not only providing a service to those without automobiles, but it is also getting people out of automobiles and getting automobiles off campus.

The university is now exploring ways to make the campus shuttle a permanent feature. Both purchase and lease arrangements are being explored.

### Long-Range Transit Planning Study

The mass transit technical study (1) that preceded the new bus system for Iowa City was of a short-range nature. Its emphasis on the short range was primarily due to the need to move rapidly and to the lack of forecasts. Forecasts of population, employment, and travel are now being produced as part of the Iowa City Urban Area Transportation Study. Consequently, it is now possible to conduct a long-range investigation and develop a plan for the long-range transit needs of the Iowa City area. The Institute of Urban and Regional Research hopes to participate in such a long-range transit investigation again as a subcontract to Johnson County Regional Planning Commission, which is responsible for the area transportation study.

## CURRENT POLICY QUESTIONS

Even though Iowa City does not suffer so severe a financial plight as most American municipalities, it does not have sufficient funds to use for risk capital to play an active and innovative role in transit. Additional capacity was provided with full knowledge that additional subsidy would be increased. The city could increase patronage by extending the level of service, constructing bus shelters, developing a program to market transit, increasing parking costs, and integrating the transit system with a campus shuttle system to improve distribution. However, increased revenues would not cover the increase in cost, and still more subsidy would be necessary.

What level of service should be provided? This is a key question in Iowa City and is relevant to other public systems that have similar "success." Every time a public system assumes a private operation, the question of extending the level of service must be addressed. If, as in the case of Iowa City, the patronage response is greater than the capacity provided, there will be disagreement as to whether additional service should be provided.

## CONCLUSIONS

There are a variety of conclusions that can be drawn from the experience in Iowa City to date. However, Iowa City is unique in that it is a university-dominant city, and the main campus and the CBD are adjacent, which provides an extremely strong central focus that is conducive to being served by transit. This uniqueness, of course, limits the transferability of the experience. Nevertheless, the decline of transit has

been reversed in Iowa City, and it is of interest to determine how this was accomplished. Clearly, the most important factor is the reduced fare, which in itself accounts for an approximate doubling of the patronage in this particular community setting. Students are on extremely limited budgets, and faculty and staff parking permits cost $60 per year. Similarly, the environmental awareness in a university community contributes to some extent to the increased use of both bicycles and buses in Iowa City. At the same time that the bus patronage was increasing rapidly during September and October, there was a substantial increase in the utilization of bicycles. Another factor that may have contributed to the increase in patronage was the wage-price freeze that was in effect when the bus system was instituted. People may have been more rational with respect to out-of-pocket transportation costs than in the past.

Iowa City is now in a position to actively promote transit and to extend its level of service even further if funding can be found. The dilemma is that additional funds to increase the level of service will not generate concomitant revenues. Additional subsidy necessary to increase the level of service is difficult to find because the city originally selected a level of service and a subsidy level in conjunction with budgeting decisions that provide for other necessary municipal services. Consequently, what may happen is that the operation will stagnate at its present level. As costs begin to rise and patronage declines, there will be an increasing pressure to increase fares and thus begin the whole cycle that has defeated transit in the past.

Within the next couple of years, several key policy issues with respect to transit, parking, downtown renewal, streets and highways, and campus planning will be crystallizing. The success of transit in Iowa City and decisions as to its future role will play an important part in these key total transportation policy issues.

Can Iowa City afford more success? Currently, the city attempts to provide service to actual patrons but with increasing subsidy requirements. Substantial increases in service will require a more detailed analysis of benefits to offset the increased subsidy. These kinds of questions are being explored by students in the Urban Mass Transit Administration supported by the University Research and Training Program in Urban Transportation at the University of Iowa. This program has provided a reservoir of talented students to assist the community in analysis of transit issues. Their work has provided both the university and the community with assistance in formulating transit alternatives.

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